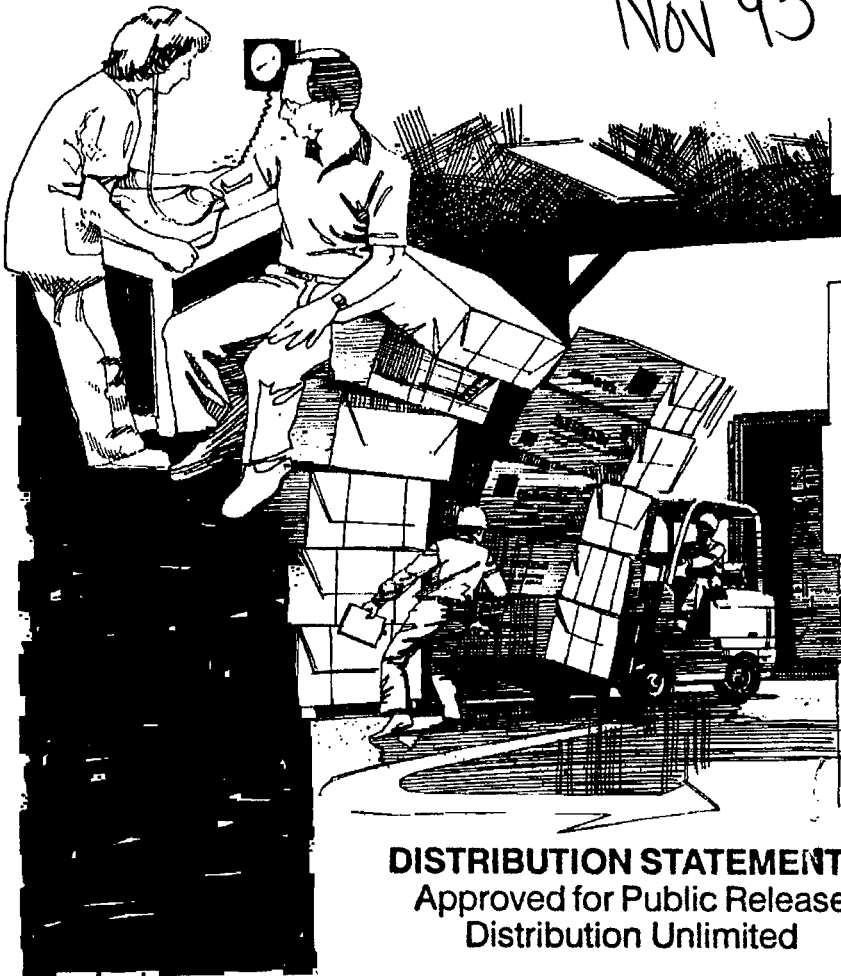


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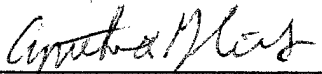


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Foreword

Question: How can you increase worker protection, cut costs, enhance productivity, and improve employee morale?

Answer: Do a better job of managing your safety and health program.

No matter how sophisticated your safety and health efforts, they can always be improved. No matter how small your worksite, systematic methods for protecting workers can work for you.

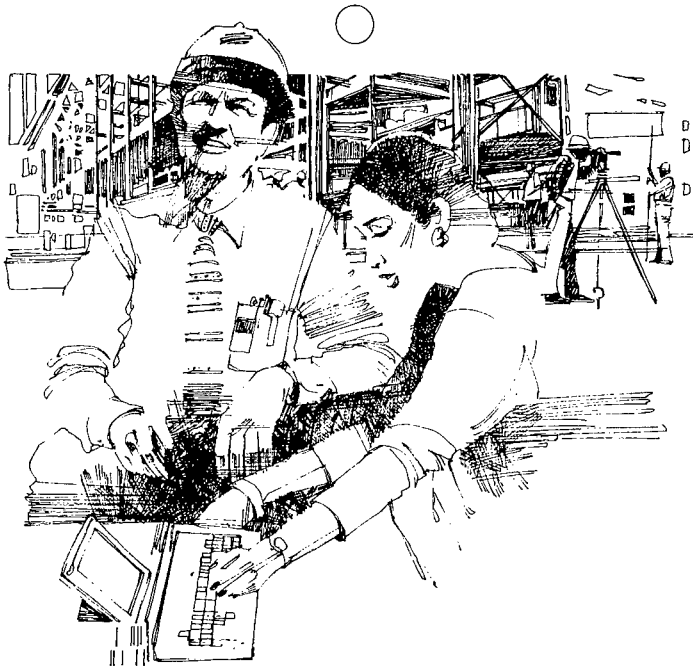
Effective leadership is the key to reducing the number and severity of workplace injuries and illnesses. This means using proven methods to find and understand existing and potential hazards, and then either eliminating or controlling those hazards.

This Guide outlines a leadership initiative to recognize and understand workplace hazards and potential hazards, to eliminate or control those hazards, and to train employees at all levels so they understand the hazards they may be exposed to and know how to help protect themselves and others. To accomplish this, the Guide is divided into four sections, what OSHA calls "major elements":

1. Leadership and Employee Involvement.
2. Worksite Analysis.
3. Hazard Prevention and Control.
4. Safety and Health Training.

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Section I

Leadership and Employee Involvement

This section discusses the leadership needed to encourage employee involvement at all levels in safety and health protection. Many of the actions listed apply to all areas of supervision. The Guide simply puts them to use improving worker safety and health protection.

When you embark on a journey, you usually have a reason for going, a destination, and a specific plan for reaching your destination. Similarly, when planning a safety and health program, you first decide and put in writing your reason for establishing such a program. This is your *policy*. Next you

decide where you want to end up. This is your *goal*. Then you map out the path toward your goal, the roads you will take and the vehicles you will employ. These are your *objectives*. In this way you determine the direction of your program.

Safety and health policy

By developing a clear statement of policy, you help everyone involved with the worksite understand the importance of safety and health protection in relation to other organizational values. By clearly communicating the policy to all employees, you ensure that no confusion will exist when a conflict arises between two of these values, such as operations and safety or health.

The hallmark of every successful safety and health program is the top leader's active and aggressive commitment. This commitment, in turn, influences the actions of the organization's managers, supervisors, and employees. It ultimately will determine the effectiveness of the safety and health program in preventing workplace injuries and illnesses.

The organization states its commitment through a written and clearly communicated policy for workplace safety and health. This policy stresses the priority of employee safety and health. The policy statement should be signed by the highest ranking official on the site.

The priority of safety and health

A truly successful organization enhances the operations, production, and quality control of the mission through workplace safety and health. If your policy statement makes this clear, it will be easier for employees to choose the correct action when a conflict arises between safety and health and other priorities. Here are some examples of policy statements that convey this belief:

- "People are our most important resource. Our principal responsibility is the safety and health of our employees."

- “Every employee is entitled to a safe and healthful place in which to work.”
- “No job is so important that it can’t be done in a safe and healthful manner.”

Communicating your policy

To be effective, it is critical that your safety and health policy be communicated to all employees. You communicate your policy by word, action, and example.

- **Communicate by word.** A new employee starts learning about the organization’s attitude toward safety and health from day one. By discussing job hazards and providing training in safe work procedures, both one-on-one and in group meetings, you tell the employee that safety and health have a high priority in your organization. You will want to include a written statement in the information you give new employees. A written statement —

- Clarifies the policy.
- Creates consistency and continuity.
- Serves as a checkpoint whenever safety and health appear to conflict with production or other priorities.
- Supports supervisors in their enforcement of safety and health rules and safe work practices.

Keep in mind that this written statement is not the policy. It is simply one way of communicating the policy. The real policy is your attitude toward your employees’ safety and health. You demonstrate this attitude by your actions.

- **Communicate by action.** What you *do*—or fail to do—speaks louder than what you *say*. Demonstrate your concern for your employees’ safety and health by committing resources to safe work practices and personal protective equipment (PPE) where needed, to safety and health training, and to the prevention and control of unsafe or unhealthful work or working conditions. Whenever you demonstrate a willingness to integrate safety and health requirements with

operational goals, your actions forcefully and clearly proclaim your policy.

- **Communicate by example.** Leaders and supervisors express the organization's attitude toward workplace safety and health by their daily example. The rules and regulations that you post on bulletin boards and discuss at meetings are useless if the command does not follow and enforce them. Set an example: Use PPE properly. Operate equipment safely. Hold supervisors accountable for their safety and health responsibilities. Run your organization in a safe and healthful manner.

Goal

By setting a safety and health policy, you have determined the reason for your journey: to establish an effective safety and health program. Now you must choose your destination, the point towards which your program strives. It is time to identify and set your program goal.

The policy statements discussed above boil down to the same concept of desiring to provide work and working conditions that are not harmful to your employees. This is in keeping with the stated purpose of the Occupational Safety and Health Act of 1970 "to assure so far as possible . . . safe and healthful working conditions. . ." and to require that each leader "furnish to each of his employees employment and a place of employment which are free from recognized hazards. . . ."

In moving from broad concept to more concrete goal, there are at least two basic goal types to consider: numerical and descriptive.

- **Numerical goal.** Numerical goals have the advantage of being easy to measure. However, it is difficult to set a numerical goal that is both attainable and comprehensive enough to serve as the destination for your journey. If you set a goal, for example, of zero hazards at any time, it may be so difficult to reach that you and your employees will become disillusioned

long before you have a chance to reach your destination. You could set a goal of a certain number of injuries. In doing so, however, you ignore both illnesses and those existing hazards that have not resulted in an injury as yet. A goal of a certain number of injuries and illnesses may not be feasible. Illnesses often are difficult to recognize until long after employees' exposure to hazards that could have been prevented or better controlled. And as with the example above, this goal does not address hazards that have not yet resulted in injury or illness.

- **Descriptive goal.** No numerical goal can be sufficiently inclusive and still attainable. Therefore, OSHA recommends that you adopt a broad, descriptive safety and health goal: A comprehensive program that assesses all existing and known potential hazards of your worksite and prevents or controls these hazards. Such a goal is neither as succinct nor as easily measurable as a numerical goal, but it is attainable. Further, this goal will be helpful in setting objectives. And it should not be difficult to evaluate objectives and program results against this goal.

Objectives

You have established the reason for your journey (policy) and your desired destination (goal). Now you are ready to decide on a travel route. The specific paths you will follow in your journey are your objectives. Setting objectives will make the difference between a haphazard trip and a carefully planned journey. The latter is much more likely to put you where you want to be.

Begin to develop meaningful objectives by answering these questions:

- Where do you want to be?
- Where are you now?
- What must be done to get from here to there?

When you set a goal, you determined where you wanted to be. The next step is to determine where you are now.

Where are you now?

Before determining how to get from Point A to Point B, it helps to have a clear idea of the location of Point A. This may seem absurdly obvious. But most of us, at one time or another, have jumped into a new project, or taken off on a new direction, without first assessing our present situation. Now is the time to gather as much information as possible about the current conditions at your workplace and about practices that are already a part of your safety and health program.

Is your safety and health program complete? At a minimum, your program should reflect these four basic elements:

- Command leadership and employee involvement.
- Worksite analysis.
- Hazard prevention and control.
- Safety and health training.

Visible leadership

If employees can see the emphasis that commanders put on safety and health, they are more likely to emphasize it in their own activities. It is important for worksite supervisors to follow safety and health rules and work practices scrupulously to provide an example for rank and file workers. They should show their involvement in other ways: for example, making worksite safety and health inspections; chairing the safety and health committee; personally stopping activities or conditions that are hazardous until the hazards can be corrected or controlled; personally tracking safety and health performance; and—an essential command function—holding supervisors and employees accountable for their actions. The element of leadership also should include ensuring equal safety and health protection of any contract workers at the site.

Remember: Actions speak louder than words.

Provide visible command leadership in implementing the program and ensure that all workers at the site, including

contract workers, are provided equally high quality safety and health protection so that all will understand that the command's commitment is serious.

Employee involvement

The best worker safety and health protection occurs where everyone at the worksite shares responsibility for protection. For that to happen, all employees must know that they are helping to shape the program. Employees at all levels should be actively involved in finding and correcting safety and health problems. This does not mean the commander gives up responsibility and authority. The Occupational Safety and Health Act places responsibility for worker protection from occupational hazards squarely on the employer. The wise commander, however, uses employees' unique knowledge and experience to help find and resolve problems. The Guide recommends that employers consider the following to involve employees in the program.

Encourage employee involvement in the structure and operation of the program and in decisions that affect their safety and health. They will be more likely to commit their insight and energy to achieving the safety and health program's goal and objectives.

Effective protection from occupational hazards takes commitment from commanders. That commitment is essential, and it must be visible. Successful commanders use a variety of techniques that visibly involve them in the safety and health protection of their workers. Look for methods that fit your style and your worksite. Methods generally fit in the following classifications:

- Getting out where you can be seen.
- Being accessible.
- Being an example.
- Taking charge.

Getting out where you can be seen

In recent years, we often heard the phrase “management by walking around.” This describes a commander who frequents all parts of the operation, getting to know the people who make it happen and seeing first hand what is working well and what isn’t. Not only can this succeed as a leadership technique; it also sends a message. Employees who see the commander “walking around” likely will come to believe that he or she cares about what they are doing and how well they are doing it. And when they see that certain areas—like safety and health—interest the “big boss,” they become more aware of these areas.

OSHA’s safety and health program management guidelines recommend that all commands “provide and encourage employee involvement in the structure and operation of their [safety and health] program and in decisions that affect their safety and health.”

Why should employees be involved?

Involving your employees in a program that directly affects their safety and health is the right thing to do. It is also the smart thing to do. Here’s why:

- Workers are most in contact with potential safety and health hazards. They have a vested interest in effective protection programs.
- Recent experience has demonstrated that workers make highly valuable problem-solvers.
- Group decisions have the advantage of the group’s wider field of experience.
- Research shows that employees are more likely to support and use programs to which they have had input.
- Employees who are encouraged to offer their ideas and whose contributions are taken seriously are more satisfied and productive on the job.

Employees who understand workplace hazards will realize

that they have the most to gain from preventing or controlling exposure to those hazards. Knowledgeable and aware employees tend to be safe workers and also good sources of ideas for better hazard prevention and control.

Improved support

Supervisors often complain that they cannot get workers to fully comply with required safety measures, whether that means wearing appropriate personal protective equipment or following safe work procedures. How do you change that?

Most of us do not like to have ideas forced upon us. We are more apt to support ideas we have had a part in developing and implementing. Workers allowed to participate in the rule-making process have a personal stake in ensuring that those rules are followed.

Give employee involvement in establishing rules and procedures a try. If enforcement remains a problem, you still have the option to take disciplinary action.

Assignment of responsibility

As a leader, you are ultimately accountable for the safety and health of your employees. You cannot delegate this accountability to others. You can, however, expect others to share responsibility for certain elements of the safety and health program.

Everyone in the workplace should have some responsibility for safety and health. Clear assignment helps avoid overlaps or gaps in accomplishing needed activities. In particular, you should make sure that the safety and health "expert" at the worksite is not assigned operational responsibility that properly belongs to line supervisors. This would include functions such as supervising and evaluating a worker's performance in areas of safety and health, providing on-the-job training in safe work practices and personal protective equipment, and encouraging worker

participation in safety and health activities.

The responsibilities should flow logically from the objectives that were set to meet the overall program goal. Assign and communicate responsibility for all aspects of the program so that leaders, supervisors, and employees in all parts of the command know what performance is expected of them.

Provision of authority

Any realistic assignment of responsibility must be accompanied by appropriate authority and adequate resources. The latter includes appropriately trained and equipped personnel as well as sufficient operational funding.

Accountability

The purpose of an accountability program is to help all team members understand how critical their performance is and to teach them to take personal responsibility for their performance.

In the present context, accountability ensures that your safety and health program is not just a “paper tiger” with no real power to win its objectives.

Once you have assigned responsibility and provided the appropriate authority and resources to individuals, you must follow up by holding these people accountable for achieving what they have been asked to do. Accountability is crucial to helping employees understand how critical their individual performance is and to teaching them to take personal responsibility for their performance.

Hold leaders, supervisors, and employees accountable for meeting their responsibilities so that essential tasks will be performed.

Your employees deserve to have a clear understanding of the nature, severity, and timetable of consequences. The

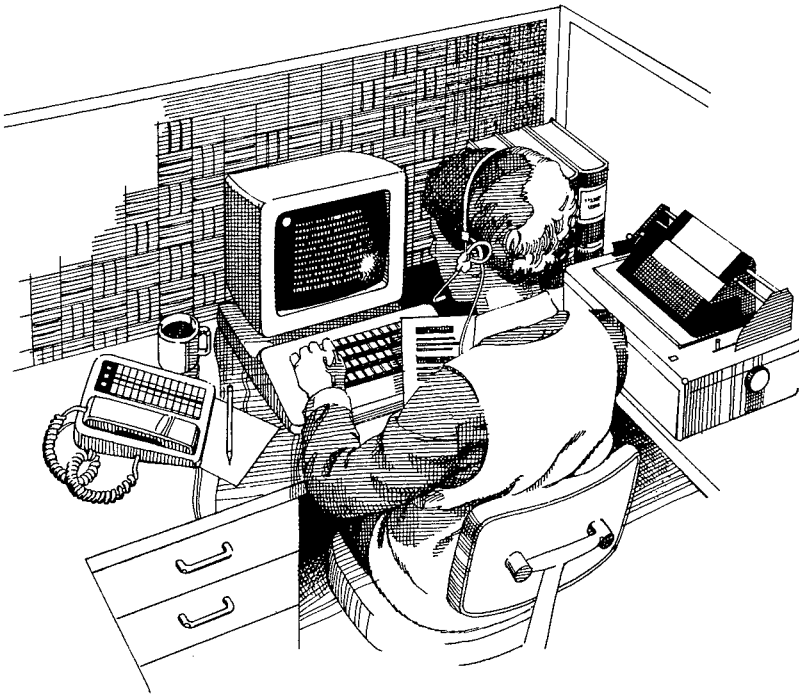
interaction between leaders and employees provided by an effective accountability program allows your employees to choose for themselves: they can change their performance, they can attempt to change but ultimately acknowledge an inability to perform adequately, or they can choose to ignore your expectations and endure the consequences.

Program evaluation

Once your safety and health program is up and running, you will want to assure its quality. You do this by evaluating program activities and their results in relation to the established goal and objectives. During this evaluation, keep these questions in mind:

- Did we get where we wanted to go?
- Did each specific activity help us get there?

Review program operations at least annually to evaluate their success in meeting the goal and objectives, so that deficiencies can be identified and the program and/or the objectives can be revised when they do not meet the goal of effective safety and health protection.



Section II

Worksite Analysis

If you are to protect your employees from workplace hazards, you obviously first must understand just what those hazards are. Are you sure you know all the potential hazards generally associated with your type of operation and your specific working conditions?

Worksite analysis is a combination of systematic actions that provide you with the information you need to recognize and understand the hazards and potential hazards of your workplace. While these actions may appear complicated at first glance, they consist of activities that already are being performed in most workplaces. For the sake of clarity, the Guide differentiates these actions as follows:

-
- Comprehensive hazard identification
 - Comprehensive hazard surveys
 - Hazard analysis of changes in the workplace
 - Routine hazard analysis
 - Regular site safety and health inspections
 - Employee reports of hazards
 - Accident/incident investigations
 - Injury and illness trend analysis

Comprehensive hazard identification

Three components make a complete hazard inventory from which an effective program of prevention and control can be designed. The first of these is the comprehensive survey. This is the most basic of all the tools used to establish the inventory of hazards and potential hazards at your worksite. This survey is best performed by experts from outside the worksite, including safety professionals, engineers, industrial hygienists, and in most cases, occupational medicine specialists. After the initial survey, only periodic comprehensive surveys need be done; these will enable the expert who is conducting the survey to apply new information about hazards or methods of control.

The second component of comprehensive hazard analysis is change analysis. This means what its name suggests: each time there is a change of mission, facilities, equipment, processes, or materials in your workplace, the intended change should be analyzed for hazards before being introduced. This helps you avoid exposing your workers to new hazards. You also avoid the needless expense of retrofitting controls after installation and use.

The last component of a complete hazard identification is routine hazard analysis. The basic form of this analysis, which is useful at every type of worksite, is the job safety analysis. This analysis breaks a job into tasks and steps and then analyzes the potential hazards of each step. The analysis then

produces a method of prevention or control to reduce exposure. A variation used at worksites with highly complex hazards—such as chemicals or nuclear energy—is the process hazard analysis. This analysis reduces a process to its smallest elements and then identifies these elements' hazards and devises preventions or controls. In rapidly changing workplaces such as construction, phase hazard analysis is another useful form of the routine hazard analysis. Here each phase of the rapidly changing work is analyzed for the new hazards it may introduce so that preventions or controls can be devised.

So that all hazards are identified—

- Conduct comprehensive worksite surveys to establish safety and health hazard inventories and update the surveys periodically as expert understanding of hazards and the methods of control change.
- Analyze planned and new facilities, processes, materials, and equipment.
- Perform routine hazard analysis of jobs, processes, and/or varied phases of work as needed.

Establishing a complete hazard inventory is not as complicated as it may sound. It begins with having industrial hygiene, safety, and occupational health experts conduct a comprehensive survey of your worksite to determine the existing and potential hazards. Periodic surveys, done at intervals that make sense for the size and complexity of your worksite, will bring into play any new engineering or scientific knowledge of hazards and their prevention. They also can help find new hazards that have evolved along with work procedures over time.

Change analysis prevents expensive problems before they occur. Individuals who are knowledgeable in worker health and safety can help you design and plan for changes in your worksite. Change analysis uses elements of routine hazard analysis appropriate to the type of change being contemplated.

Routine hazard analysis also adds to your inventory. It enables you to control hazards that develop in work procedures or within processes, or that occur because of changes in the phases of the operation.

The tools and approaches used in the various types of hazard analysis tend to overlap. This overlapping helps ensure total coverage and a more comprehensive inventory on which to base your prevention program.

Involving your employees in the effort to inventory hazards is sure to pay off. Hazard surveyors will benefit from workers' practical knowledge. And employees, as they become more knowledgeable about workplace hazards, prevention, and controls, will be better able to protect themselves and others.

Remember, the first step in protecting your workers is recognizing the hazards that need to be prevented or controlled.

Catching the hazards that escape controls

In the ideal safety and health scenario, leaders know precisely the hazards and potential hazards to which employees could be exposed and have designed a perfect system of prevention and control. In real life, some hazards may escape detection during the inventory process. Others have a way of slipping out of the controls set up to protect workers. So, you need ways to catch these hazards and get them controlled, or better controlled, before anyone gets hurt.

Four tools to help catch hazards that escaped controls are—

- Regular site inspections.
- Employee reports of hazards.
- Accident and near-miss investigations.
- Analysis of illness and injury trends.

Regular site safety and health inspections

Inspections are the best understood and most frequently used worksite analysis tool. Much has been written about

inspections, and many inspection checklists are available in other publications.

What do we mean by regular site inspections? The term “inspection” refers to looking closely at something to see if it meets requirements. Several kinds of inspections are probably done at your worksite, some of them at fixed intervals. In the OSHA Guidelines for Safety and Health Program Management, the term “regular site inspection” means a general inspection of every part of the worksite to locate any hazards that need correction. This includes routine industrial hygiene monitoring and sampling.

Inspection frequency

The regular site inspection is done at specified intervals. OSHA recommends that medium and large fixed worksites be completely inspected at least every quarter, with some part of the inspection occurring each month. For construction sites, OSHA recommends at least weekly site inspections because of the rapidly changing nature of the site and its hazards.

At small fixed worksites, the entire site should be inspected at one time. And even for the smallest worksite, inspections should be done at least quarterly. If the small worksite uses hazardous materials or involves hazardous procedures or conditions that change frequently, inspections should be done more often.

What should be inspected?

A methodical inspection will follow a checklist that is based on the inventory of hazards and the preventive actions and controls designed to reduce or eliminate worker exposure. Regular site inspections should be designed to check each one of those controls to make sure that hazards are contained.

General site inspections should be performed by personnel at the worksite. These employees will need training to recognize hazards that can slip out of the controls designed to

reduce employee exposure to them. Inspectors also should watch for hazards that may not have been identified in the comprehensive survey or uncovered by other means.

Provide for regular site safety and health inspections, so that new, recurring, or previously missed hazards and failures in hazard controls are identified.

Employee reports of hazards

Employees play a key role in helping discover and control hazards that may develop—or that already exist—in your workplace. They have a unique and valuable perspective on procedures and conditions.

Army employee reports of hazards will be reported on DA Form 4755: Employee Report of Alleged Unsafe or Unhealthful Working Conditions. Additional locally developed procedures are encouraged. Employees may also file a complaint with the Department of Labor, Occupational Safety and Health Administration.

A successful safety and health program finds and corrects problems before any harm is done. However many workers you employ, you have that many pairs of eyes to help you uncover hazards. Provide one or more systems for employees to alert you to hazards, and guarantee that employees who report hazards will be protected from harassment. Employees will need to see timely and appropriate responses to their reports. Such responses are visible evidence of the commander's commitment to the safety and health program and desire for meaningful employee involvement.

So that employee insight and experience in safety and health protection may be used and employee concerns addressed, provide a reliable system for employees to, without fear of reprisal, notify command personnel about conditions that appear hazardous and to receive timely and appropriate responses. Then, encourage the employees to use the system.

Command policy

You have decided what your policy will be concerning employee reporting. The next step is to ensure that all employees understand the policy. Further, they need to be made aware that the policy is genuine. In larger worksites, the policy should be typed and placed on bulletin boards, distributed to all employees, and discussed in weekly or monthly safety meetings. In smaller worksites, it may be sufficient to gather everyone together, go over the policy, and then invite discussion or questions. You will know that you have done enough when every employee, when asked, can tell you what the policy is.

Accident/incident investigation

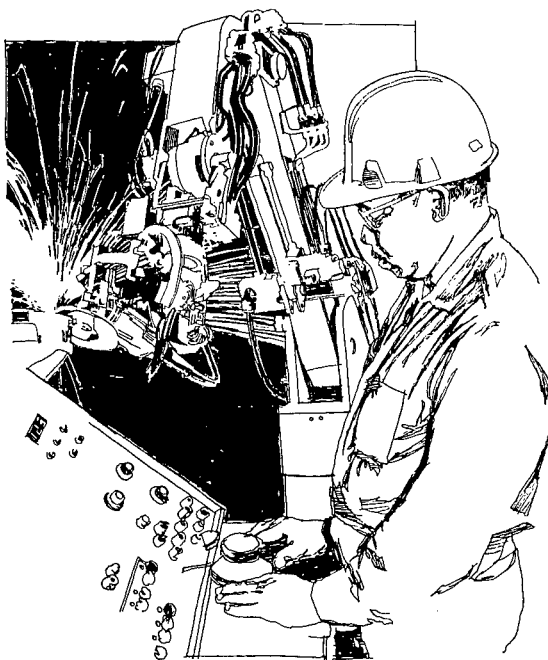
Accident/incident investigation is another tool for uncovering hazards that either were missed earlier or that have managed to slip out of the controls planned for them. An investigation is useful only when its aim is to discover every contributing factor to the accident or incident. In other words, your objective is to identify root causes.

The definition of an Army accident is contained in AR 385-40. Since all accidents result in property damage or personal injury, they should be investigated to determine the contributing causes and actions needed to prevent future occurrences. Since incidents could result in property damage or personal injury, these, too, should be investigated. "Near misses" fall into this latter category. This term describes incidents where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage or injury could have occurred.

Procedures for investigation of Army accidents are contained in AR 385-40.

Injury and illness trend analysis

It is useful to review injuries and illnesses that have occurred over a period of time, including those illnesses that do not appear to be occupationally related. Such an analysis may reveal patterns or clusters that suggest common worksite causes or origins not apparent when the cases first were recorded.



Section III

Hazard Prevention and Control

Once you have inventoried the hazards and potential hazards of your workplace, you can begin designing a program of prevention and control. This consists of the following actions:

- Establishing appropriate controls.
- Engineering controls where feasible.
- Safe work practices with enforcement, where necessary, through a disciplinary system.
- Personal protective equipment (PPE).

-
- Administrative controls.
 - Providing preventive maintenance.
 - Preparing for emergencies.
 - Implementing a medical program.

Establish appropriate controls

You have conducted a comprehensive survey of your workplace to uncover existing and potential hazards. Now what are you going to do about them? The Occupational Safety and Health Act of 1970 requires that each command furnish to each employee "... employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm. ..." (29 U.S.C. 651, Sec. 5(a)(1))

We will discuss the leadership systems used to prevent and control hazards. These include the establishment of controls through engineering, work practices, personal protective equipment (PPE), and administrative arrangements; systems to track hazard correction; preventive-maintenance systems; and emergency preparation and medical programs.

In designing a program of prevention and control, preventing your employees from being exposed to a hazard is always the ideal choice. This means removing the hazard or preventing exposure through engineering controls. Where neither of these measures is feasible, the next best choice is complete enclosure. Where complete enclosure is not feasible, a combination of partial enclosure and work practices, perhaps including PPE, is the next best choice. Where no enclosure is possible, a combination of work practices and PPE should be used.

The goal of the hazard prevention and control program is to foolproof the workplace and its operations, to the extent feasible, to keep employees from being harmed. It is an ongoing program that is never finished. You will design and implement and then revise and improve preventions and controls as your worksite changes and as your store of hazard

information grows.

The most frequent sources for updating hazard information are routine general inspections, employee reports of hazards, and accident/incident investigations. Other good sources for hazard information updates are ongoing job hazard analyses, process and phase hazard analyses, change analyses, and periodic comprehensive hazard surveys.

Selecting the best control

Hazards take many forms: air contaminants, tasks involving repetitive motions, equipment with moving parts or openings that can catch body parts or clothing, microorganisms, extreme heat or cold, noise, toxic liquids, and more. The terms we use here to describe the principles of engineering control may sound a little strange when applied to some of these hazards. You may find that others will use the terms somewhat differently. There should be agreement, however, about the concepts that the terms have been chosen to describe.

Engineering controls

To the extent feasible, the work environment and the job itself should be designed to eliminate or reduce exposure to hazards. Although this approach is called “engineering control,” it does not necessarily require that an engineer design the control.

Enclosure of hazards

When you cannot remove a hazard and cannot replace it with a less-hazardous alternative, the next best control is enclosure. Enclosing a hazard usually means there is no hazard exposure to workers during normal operations. There still would be potential exposure to workers during maintenance operations or if the enclosure system breaks

down. For those situations, additional controls such as work procedures or PPE might be necessary to control exposure.

Barriers or local ventilation

When the potential hazard cannot be removed, replaced, or enclosed, the next best approach is a barrier to exposure or, in the case of air contaminants, local exhaust ventilation to remove the contaminant from the workplace. This engineered control involves potential exposure to the worker even in normal operations. Consequently, it should be used only in conjunction with other types of controls such as safe work practices designed specifically for the site condition and/or PPE.

Work rules and procedures

Even when the hazard is enclosed, there will still be times when exposure can occur, such as when maintenance is necessary or when the enclosure system suffers a partial or complete breakdown. When the hazard is only partially controlled by a barrier or local ventilation, there is a good possibility of exposure in normal operations. This is where work practices become important (along with PPE in many cases).

Drawbacks to work procedures in controlling hazards also apply to PPE. Employees need good training in why the PPE is necessary and how to use and maintain it. They also need positive reinforcement and fair, consistent enforcement. An additional drawback is that some PPE is uncomfortable and puts additional stresses on employees, making their work and their ability to work safely difficult. This is particularly true where heat stress is already a factor in the work environment.

Administrative controls

Administrative controls are employed as a last resort, when no other way is known to control hazards. They include rotation of

workers through different jobs to “even out” exposure to hazards or to allow workers to work part of the day without respirators or other burdensome PPE. Other administrative controls are longer rest breaks, additional relief workers, and exercise breaks used to vary body motions during the work day.

Administrative controls such as these have been employed with dangerous but widely used toxic substances such as lead, with extreme temperatures, and with ergonomic hazards. They are used in conjunction with other controls and should be replaced with better controls whenever feasible.

Keep in mind that work practices and PPE place special responsibilities on the employees who use them. Employees should be trained to understand why these protections are necessary and how they can use these methods to protect themselves and others. You should stress the seriousness of these protections in every possible way, including, when necessary, the use of fair and consistent discipline.

Preventive maintenance

A good equipment maintenance program can keep engineering control systems working as intended and can prevent ordinary nonhazardous equipment from becoming hazardous.

Prepare for emergencies

Planning and preparing for emergencies is an essential part of any effective safety and health program. The greater the possibility of an emergency, the more preparation should be done. All employees should know exactly what they must do in each type of emergency situation. With sufficient practice, the responses needed at times of crisis can become practically automatic.

Implement a medical program

Are you remembering the "health" in your occupational safety and health program? The Occupational Safety and Health Act of 1970 aims "...to assure so far as possible every working man and woman in the Nation safe and healthful working conditions. . . ." Toward this end, OSHA's Safety and Health Program Management Guidelines strongly urge the identification and control of health hazards and the implementation of a medical program.

Your organization's medical program, what we call its occupational health delivery system (OHDS), is an important part of your safety and health program. It can deliver services aimed at prevention of hazards that can cause illness and injury, early recognition and treatment of illness and injury, and measures to limit their severity.

You may find it more difficult to establish the goals and objectives for your OHDS than for the other parts of your safety and health program. The harm it prevents may not appear obvious at first. For example, an employee who has hand pain and is gradually developing a cumulative trauma disorder (CTD) will seem to have a less serious problem than the employee who has a severe cut or a broken bone from an accident. But work-related health problems are no less serious in terms of costs and human suffering than the more obvious injuries.

An effective OHDS will help reduce all types of safety and health hazards and their resulting injuries and illnesses. The positive results from such a program will be measurable by a decrease in lost work days and workers' compensation costs. You also can expect this program to help increase worker productivity and morale.

A medical program is another name for the systems that leaders put in place to ensure occupational health expertise within the overall safety and health program. There are many ways for you to find and use occupational health expertise.

Having a medical program on site does not necessarily

mean having an on-site doctor or nurse. It does mean involving occupational health professionals in worksite analysis for hazards, in hazard prevention and control programs, in early recognition and treatment of injuries and illnesses, and in limiting the severity of illness and injury.

Communicating your occupational health concerns to your supporting Army medical activity is the key step to assuring that your employees can be protected from job-related diseases.

As an leader, you need to consider the special characteristics of your organization in order to determine which of these services are appropriate. The factors involved in making this decision include the type of processes and materials your employees work with and the resulting or potential hazards. Other things to consider are the type of facilities in which they work, the number of employees at each site, and the characteristics of this work force, such as age, gender, cultural background, and educational level. The location of each operation and its nearness to a health care facility are also important.

Work with your supporting medical activity to assure that your organization is getting the occupational health support essential to protect your employees.

This guide recommends that you establish a medical program that uses occupational health professionals in the analysis of hazards, early recognition and treatment of illness and injury, and limitation of the severity of harm. Your program also should provide first aid and cardiopulmonary resuscitation (CPR) on site and physician and emergency medical care nearby.



Section IV

Safety and Health Training

Can your employees explain every existing and potential hazard to which they are exposed? Do they know how to protect themselves and their coworkers from these hazards? Can they tell you precisely what they must do in the event of a fire or other emergency?

Training can help your employees develop the knowledge and skills they need to understand workplace hazards and protect themselves. OSHA considers safety and health training vital to every workplace. This is the fourth major element in the Commander's Safety and Health Program

Management Guidelines.

Safety and health education is most effective when part of wider training in performance requirements and job practices. It may be as simple as the precautionary warnings given to new workers when they are being shown the job, or it may be much more elaborate and formalized.

Identifying training needs

New employees need to be trained not only to do the job, but also to recognize, understand, and avoid potential hazards to themselves and others in their work area and elsewhere in the workplace. Contract workers may also need training to recognize the hazards or potential hazards in your workplace. Experienced workers will need training if the installation of new equipment changes their job in any way, or if process changes result in new hazards or increases in previously existing hazards. All workers may need refresher training to keep them prepared for emergencies and alert to ongoing housekeeping problems. Workers needing to wear PPE and persons working in high-risk situations will need special training.

For an effective program of safety and health management, it is crucial that all worksite personnel understand their role in that program, the hazards and potential hazards that need to be prevented or controlled, and the ways to protect themselves and others. You can achieve such a program by—

- Ensuring that employees understand hazards.
- Ensuring that supervisors understand their responsibility to analyze the work under their supervision for hazards, maintain physical protections, and reinforce and enforce needed protective measures.

Employee training

At a minimum, employees must know the general safety and health rules of the worksite, specific site hazards and the safe

work practices needed to help control exposure, and the individual's role in all types of emergency situations. You usually can achieve this by thorough orientation, periodic safety and health training, and emergency drills. Additional specialized training may be needed to teach skills required for the job or for activities under the safety and health program. This guide recommends that you ensure that all employees understand the hazards to which they may be exposed and how to prevent harm to themselves and others from exposure to these hazards, so that employees accept and follow established safety and health protections.

Supervisor training

Supervisors should be given special training to help them in their leadership role. They need to be taught to look for hidden hazards in the work under their supervision, to insist upon maintenance of the physical protections in their areas, and to reinforce employee hazard training through performance feedback and, when necessary, fair and consistent enforcement. The Guide recommends the following:

So that supervisors will carry out their safety and health responsibilities effectively, ensure that they understand those responsibilities and the reasons for them, including:

- Analyzing the work under their supervision to identify unrecognized potential hazards.
- Maintaining physical protections in their work areas.
- Reinforcing employee training on the nature of potential hazards in their work and on needed measures, through continual performance feedback and, if necessary, through enforcement of safe work practices.

Since supervisors do a lot of on-the-job training, they also will need to be taught how to train and how to reinforce training. They may need help in learning how to apply fair and consistent discipline when necessary.

Senior-leader training

A good safety and health program is impossible without support and understanding from the top. Training leaders in their responsibilities is necessary to ensure continuing support and understanding. Formal classroom training may not be necessary. The subject can be covered periodically as a part of regular command meetings.

Leaders need to understand the importance of the safety and health program. It is their responsibility to communicate the program's goal and objectives to their employees. Their role also includes making clear assignments of safety and health responsibilities, providing authority and resources to carry out assigned tasks, and holding subordinate supervisors accountable.

Training should emphasize the importance of leaders' visibly showing their support for the safety and health program. And, of course, they should be expected to set a good example by scrupulously following all the safety and health rules. They should also actively encourage employee involvement in safety and health problem identification and resolution.

These topics can be covered and illustrated with examples in a relatively short time. They should be repeated at least annually.

Job orientation

The format and extent of orientation training will depend on the complexity of hazards and the work practices needed to control them. This training is usually presented by the personnel officer or the new employee's supervisor.

For large workplaces with more complex hazards and work practices to control them, orientation should be carefully structured. You want to make sure that new employees start the job with a clear understanding of the hazards and how to protect themselves and others. Army organizations frequently provide a combination of "classroom" and on-the-job training.

Vehicle safety

Motor vehicle accidents are the leading cause of work-related deaths. Given this clear hazard, all workers operating a motor vehicle as part of their job should be trained in its safe operation. Army requirements for safe operation of Army motor vehicles are contained in AR 385-55 and AR 600-55.

Personal protective equipment (PPE)

Both supervisors and workers must be taught proper selection, use, and maintenance of PPE. Since PPE can be cumbersome sometimes, employees may need to be motivated to wear it in every situation where protection is necessary. Therefore, training should begin with a clear explanation of why the equipment is necessary, how its use will benefit the wearer, and what its limitations are. Remind your employees of your desire to protect them and of your efforts to not only eliminate and reduce the hazards but to also provide suitable personal protective equipment where needed. Explain how essential it is that they do their part to protect their health and safety.

Emergency response

Train your employees to respond to emergency situations. Every employee at every worksite needs a clear understanding of—

- Emergency telephone numbers and who may use them.
- Emergency exits and how they are marked.
- Evacuation routes.
- Signals that alert employees to the need to evacuate.

In addition, practice evacuation drills at least annually so that every employee has a chance to recognize the signal and evacuate in a safe and orderly fashion. Supervisors or their alternates should practice counting personnel at evacuation gathering points to ensure that every worker is accounted for.

Periodic safety and health training

It is important that employees receive periodic safety and health training to refresh their memories and to teach new methods of control. New training also may be necessary when OSHA standards change or new standards are issued. It is important to keep these sessions interesting. Some organizations have found it effective to give employees the responsibility of planning and presenting periodic safety and health training. This method can be successful, however, only where employees are provided adequate training resources and support to develop their presentations.

Training evaluation

Evaluation will help determine whether the training provided has achieved its goal of improving your employees' safety and performance on the job. When carefully developed and carried out, the evaluation will highlight your training program's strengths and identify areas of weakness that need change or improvement.

A plan for evaluating the training sessions should be generated as needs are being identified and training content developed. This important part of your training effort should not be put off until training is completed. Here are some ways you can evaluate your training program:

- Before training begins, to determine what areas need improvement, observe workers and solicit their opinions. When training ends, test for improvement by again observing workers. Ask them to explain their job's hazards, protective measures, and newly learned skills and knowledge.

- Keep track of employee attendance at training sessions. Training will not work for an employee who does not show up. Absenteeism can signal a problem with the worker, but it can also indicate a weakness in training content and presentation.

- At the end of training, ask participants to rate the course and the trainer. This can be done in informal discussion, or confidentiality can be assured by written questionnaire.

- Compare pre- and post-training injury and accident rates. The periods of time being compared must be long enough to allow significant differences to emerge if training has made a difference.

It is often easier to conduct an activity than to judge it. But do not ignore this evaluation phase. It will allow you to calculate your training program's profitability. Have the goals of training been achieved? Do the results warrant offering the training again at some later date? How can the program be improved? Once you have made the effort to provide employee safety and health training, you certainly want to be able to answer these questions.

Recordkeeping

Even if you operate a very small site, you must keep training records. A simple form is all you need, one that identifies the trainee, the topic or job, and the training date, with space for a brief evaluation of the learner's participation and success. The DD Form 1556 is often the appropriate form of documentation. Class rosters are also valuable documents from which management indicators can be extracted for status reports and for planning. Information such as supervisor/employee ratios, organizational training density, scope of occupations trained, and the like can be found on class rosters. These records will help you make sure that everyone who needs training receives it, that refresher courses are provided at regular intervals, and that documentation is available, when needed, to show that training was done appropriately.

OSHA enforcement

Over the past several years, OSHA has added more and more safety and health management provisions to its standards. These provisions include self-inspections for specific conditions, employee training, and specific types of hazard analysis. They also have focused more on the management of

workplace safety and health when enforcing the “general duty clause” (Sec. 5(a)(1), 29 U.S.C. 654), which requires that each employer “furnish to each of his employees employment and a place of employment that are free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees.” As a leader, you have a responsibility to take feasible steps to render your workplace free of recognized hazards. As part of this responsibility, you have a duty to establish and maintain leadership practices necessary for ensuring that safe and healthful work practices are followed.

Judicial proceedings

When a commander is cited for a violation he believes was caused by an employee’s failure to obey a safety rule, evidence of good management practices is particularly important in establishing a defense. Decisions from the Occupational Safety and Health Review Commission and the U.S. Courts of Appeal clearly hold that, in order to establish an “employee misconduct” defense, an employer must demonstrate that it has adopted appropriate safety rules, and that it enforces these rules through such means as regular training and adequate supervision. In short, employers can avail themselves of this defense only by maintaining a comprehensive, adequate safety program.

Summary

Good management of worker safety and health protection will translate into fewer injuries and illnesses. Effective leadership will pay off in better employee morale, higher productivity, and improved product quality. This guide can help you implement a quality safety and health management program to provide that protection. Your efforts to protect your workers will pay dividends for both your workforce and for the Army mission.

Appendix A

Risk Management

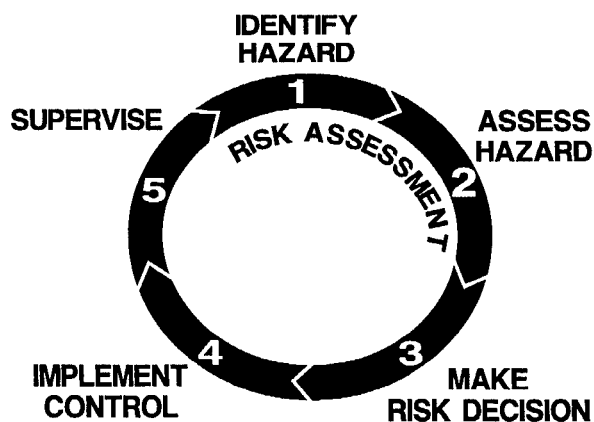
Risk management is a tool that helps leaders make sound decisions in a logical manner. Used positively, risk management can become a mindset that governs all missions and activities. It is a tool that should be used by all safety professionals throughout the Army.

Risk management enables supervisors and leaders at all levels to do exactly what the term implies: manage risks. The term is best applied generically, as leaders are confronted by a variety of risks: training risks, fiscal risks, and safety risks. Safety risk management, however, is a specific type of risk management. This article is directed toward safety risk management and how it fits into the leader's tool bag.

Risk management in theory

Risk management is a five-step cyclic process that is easily integrated into the decision-making process; it doesn't have to

Risk Management Five-step Process



be a separate consideration, and shouldn't. A risk assessment is part of risk management. It can range from simple to complex. A risk assessment causes leaders to identify hazards and threats and place them in perspective relative to the task at hand. Logically, one has to identify what the hazards are before one can determine their risk.

Risk management applied

The first step in risk management is to **identify the hazards**. The hazards are the potential sources of danger that could be encountered while performing a task—toxic materials, power tools, uneven or poorly lit work surfaces, or poorly trained workers. There could be other, less-obvious hazards that would become apparent during planning. Leaders should seek to identify all these hazards in their particular operations.

The second step is to **assess the hazards** to determine their cumulative effect on the mission or objective. Each of the hazards is analyzed to determine the probability of its causing a problem and the severity of the consequences should such a problem occur. Exercising judgment on how to eliminate or reduce hazards to lessen the overall risk is inherent in the risk-assessment process. This step allows leaders to perform a risk assessment that describes the impact of the combined hazards. The result is a statement that quantifies the risk associated with the operation: extremely high, high, medium, or low.

The third step is to **make a risk decision**. Most of the time the mission is going to have to be accomplished, so leaders have to decide the safest way to do it. Risk decisions make it possible to eliminate or control the hazards.

A key point in making the risk decision is that it should be made at the proper level. The higher the risk involved, the higher the level of authority required to make the decision.

Step four is to **implement the controls** established as a result of steps one through three. This is where supervisors

and other leaders take steps to eliminate or reduce hazards. Controls may be as substantial as writing an SOP or as simple as conducting a short safety briefing.

Step five is to **supervise**. However, supervision here is more than just seeing that people do their jobs. Supervision also means following up and continuously evaluating. It means fine tuning the operation to accommodate unforeseen issues and incorporating lessons learned for future use.

What's in the tool bag?

Supervisors need to think in terms of recognizing hazards even in the midst of carrying out risky missions. Tools available to help leaders do this include the following:

- **Safety walks.** Plan a walk-through of the worksite that includes checking SOPs as well as job sites and worker performance for safety integration.
- **Employee interviews.** Get opinions and ideas from the people who do the work.
- **Peers and associates.** Get opinions and ideas from the people who did the work previously or who do similar work.
- **Study previous accidents.** What lessons can you learn from previous accidents?

Risk management simplified

"How can my people get hurt, and what can I do about it?" This question is risk management in its simplest form. Let's look at an example of how it works:

Mr. Carson, dispatcher for a transportation motor pool, received an order to send a truck loaded with two 600-gallon fuel pods of mogas to an operational staging area located off post on a county road just inside the city limits of a small town.

About twilight, Mr. Smith and Mr. Jones were dispatched with the loaded truck. When they were about 4 miles from their destination, the truck's engine failed. Jones, the driver, pulled the truck off the road as far as possible, but about a

third of the truck was still on the road. Darkness was descending quickly, but neither man turned on the truck's lights.

Both men were standing on the front bumper examining the engine when a motorist approached in his pickup truck. He didn't see the Army truck in the fading light and slammed into its rear at about 50 mph. He and Mr. Smith were killed in the crash and Mr. Jones was severely injured. The gas pods ruptured, spilling gasoline into a nearby creek, which washed into a lake. The crash also caused a fire that destroyed both trucks and ignited a 200-acre field of wheat that was nearly ready for harvest. Finally, a fireman was injured when a can of mogas exploded, splashing him with flaming fuel. This accident cost more than \$4 million in injury, damage, and cleanup costs.

A risk assessment would have told these workers and their leaders that they were tempting fate. The truck was in violation of several state and Federal statutes regulating vehicle markings, emergency markers, and highway warning devices. These missing markings alone were enough reason to scrub the mission. In addition, the breakdown was caused by low engine oil—something that should have been discovered before the truck was dispatched. Inspection of the motor pool revealed several other trucks with critical maintenance deficiencies.

Just by virtue of the fact that they were transporting volatile materials, these workers were already undertaking a hazardous task. Risk management, in the very first step, would have *identified* a number of sources of danger for these workers and their mission. A proper inspection of the truck would have revealed the low oil and the lack of proper markings and emergency markers; the descending darkness was obvious and should have been considered.

Assessing these hazards would have alerted the leaders to the escalating danger of this mission. This is where leaders

should be asking, "How can my people get hurt, and what can I do about it?"

At this point, the leader should be asking—

- Is this truck safe for this mission?
- Does this truck meet all the standards for the mission?
- If not, can it be made mission ready or should I use another truck?
- Does it have the proper supplies on board, to include emergency supplies?
- Are the workers properly trained and experienced?
- What can go wrong? What can I do to eliminate problems?
- What can my workers do to eliminate problems?

The answers to these and other questions will help the supervisor *make risk decisions* as to which risks are acceptable and which are not, then he can begin to *implement controls*. For instance, should the mission be scrubbed because of darkness? In this instance, no; but *control* is added when the drivers are briefed on safe twilight driving and nighttime emergency procedures. Should the mission be scrubbed because the oil is low? No, but *control* is added when the oil is added to its proper level.

In the final step, the supervisor should then *supervise*. He must make sure that all controls have been implemented and reevaluate while they're being done. There's still the unsolved problem of the missing hazardous chemical warnings. Now the supervisor is facing scrubbing the mission. He didn't. It ended up costing millions, the mission was not completed, and in fact, operations that were planned for the next day had to be canceled as well.

Risk management is an ordinary tool that can help leaders reap extraordinary benefits in mission accomplishment while keeping their workers safe.

Appendix B

Hazard Abatement

Competition for dwindling dollars is increasing along with the need to reduce hazards in the workplace. The Army hazard-abatement process provides leaders the opportunity to make informed choices about where to spend their shrinking dollars and set priorities among competing interests. It also helps installations meet OSHA standards.

The worksite inspection is a key part of the accident prevention process, revealing hazards that need correction. Only qualified civilian or military safety and health professionals should conduct the required inspections. These include safety and occupational health managers, safety specialists, and engineers who meet OPM standards. Other specialists, such as industrial hygienists, are expected to provide support in their respective areas of expertise. The standards for "qualified" safety and health personnel are in section II of the glossary to AR 385-10: The Army Safety Program, dated 23 May 1988.

The official in charge of a workplace being inspected, or a designated representative, and an authorized civilian are given the opportunity to participate in the physical inspection, after which a closing conference is held with management. A written report is provided to the head of the workplace inspected. Procedures to assure correction of deficiencies should be defined at each activity. The flow chart depicts the model installation hazard-abatement process.

The fundamentals of this process are found in chapter 4 of AR 385-10. Regulations require that safety and occupational health inspection of Army workplaces be conducted at least annually. More frequent inspections are appropriate for hazardous worksites.

The worksite inspection and subsequent abatement of identified hazards let employees know that management cares about their safety and health.

Installation Abatement Process

